

## URANIUM ENRICHMENT USING MICROORGANISMS

### Abstract

[00103] The present invention provides methods for separating isotopes of actinide elements such as uranium using microorganisms, e.g., metal or sulfate reducing bacteria.

5 The microorganisms reduce the actinide element to form a precipitate, which contains a greater proportion of the lighter isotope relative to the heavier isotope than the starting material. The precipitate may be collected, re-oxidized, and subjected to multiple rounds of enrichment. Alternately, separation processes not requiring formation of a precipitate may be used. The invention also features cell-free systems for isotope separation. The invention further provides compositions produced according